

<b>SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS</b>				INITIALS / CONTROL NO. <b>LJO/014573</b>		1. REQUISITION NUMBER <b>N66604-1101-3AF3/3BF3</b>		PAGE 1 OF <b>17</b>	
<b>OFFEROR MUST COMPLETE BLOCKS 12, 17, 23, 24, &amp; 30</b>									
2. CONTRACT NO.		3. AWARD/EFFECTIVE DATE		4. ORDER NUMBER		5. SOLICITATION NUMBER <b>N66604-01-Q-4573</b>		6. SOLICITATION ISSUE DATE <b>2001 JUN 13</b>	
7. FOR SOLICITATION INFORMATION CALL:		a. NAME <b>Laina J. Ouellette</b>		b. TELEPHONE NUMBER (No collect calls) <b>401-832-1642</b>		FAX NUMBER <b>401-832-4820</b>		8. OFFER DUE DATE / LOCAL TIME <b>2001 JUN 27 2:00 PM</b>	
9. ISSUED BY <b>Commercial Acquisition Department, Building 11 Naval Undersea Warfare Center Division, Newport Code 5913, Simonpietri Drive Newport, RI 02841-1708</b>				10. THIS ACQUISITION IS <div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> UNRESTRICTED</div><div><input checked="" type="checkbox"/> SET ASIDE: <b>100%</b> FOR</div></div> <div style="display: flex; justify-content: space-between;"><div><input checked="" type="checkbox"/> SMALL BUSINESS</div><div><input type="checkbox"/> SMALL DISADV. BUSINESS</div></div> <div style="display: flex; justify-content: space-between;"><div>8(a)</div><div></div></div>		11. DELIVERY IS FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE			
15. DELIVER TO <b>Receiving Officer Naval Station Newport 47 Chandler Street Newport, RI 02841-1716 M/F: NUWC Division, Newport -- N66604-</b>				10. THIS ACQUISITION IS (continued)		12. DISCOUNT TERMS <b>Net 30</b>		13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) <input checked="" type="checkbox"/>	
17a. CONTRACTOR / OFFEROR <b>THIS IS A REQUEST FOR QUOTATION ONLY. IT IS NOT AN ORDER.</b>				16. ADMINISTERED BY <b>N66604-</b>		13b. RATING <b>DO-C9</b>		14. METHOD OF SOLICITATION <div style="display: flex; justify-content: space-between;"><div><input checked="" type="checkbox"/> RFQ</div><div><input type="checkbox"/> IFB</div><div><input type="checkbox"/> RFP</div></div>	
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT ADDRESS IN OFFER <input type="checkbox"/>				18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK IS CHECKED <input type="checkbox"/> SEE NOTE ABOVE					
19. ITEM NO.      20. SCHEDULE OF SUPPLIES/SERVICES      21. QUANTITY      22. UNIT      23. UNIT PRICE      24. AMOUNT									
<b>SEE PAGE 2</b>									
25. ACCOUNTING AND APPROPRIATION DATA									
26. TOTAL AWARD AMOUNT (For Govt. Use Only)									
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input checked="" type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.  <input type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED. </div> <div> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <input type="checkbox"/> COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY CONTINUATION SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN. </div> <div> 29. AWARD OF CONTRACT: REFERENCE _____ OFFER  <input type="checkbox"/> DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS: <b>ALL ITEMS</b> </div> </div>									
30a. SIGNATURE OF OFFEROR/CONTRACTOR					31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)				
30b. NAME AND TITLE OF SIGNER (TYPE OR PRINT)			30c. DATE SIGNED		31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT)			31c. DATE SIGNED	
32a. QUANTITY IN COLUMN 21 HAS BEEN <input type="checkbox"/> INSPECTED <input type="checkbox"/> RECEIVED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED					33. SHIP. NUMBER <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		34. VOUCHER NUMBER		35. AMOUNT VERIFIED CORRECT FOR
32b. SIGNATURE OF AUTHORIZED GOVT. REPRESENTATIVE			32c. DATE		36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL			37. CHECK NUMBER	
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT.					42a. RECEIVED BY (Print)				
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER			41c. DATE		42b. RECEIVED AT (Location)				
					42c. DATE REC'D (YY/MM/DD)		42d. TOTAL CONTAINERS		

**SCHEDULE CONTINUATION ADDENDUM**

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
0001	Extruder Drive	1	Ea.		
0002	Control Consol	1	Ea.		
0003	Screw Fed Hoppers	2	Ea.		
0004	Metering Gear Pump	1	Ea.		
0005	Horizontal Adj. Ribbon Die	1	Ea.		
0006	Combined Press/Temp Sensor	1	Ea.		
0007	Clean-up kit	1	Ea.		
0008	Twin screw extruder w/screws As per Enclosure (1)	1	Ea.		
0009	Sheet & Ribbon Take-Off System	1	Ea.		
0010	Controlled Temp. Fluid Circulator	1	Ea.		
0011	Floor stand for circulator As per Enclosure (2)	1	Ea.		

**DELIVERY SCHEDULE**

(a) The Government requires delivery to be made according to the following schedule:

ITEM NUMBER	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT
0001-0011	1 each and 2 each (item 3)	60 Days ARO

(b) The Government will consider offers that propose earlier delivery than the required delivery schedule. Offers that propose delivery that will not clearly fall within the delivery schedule specified above, will either be considered unacceptable, or a later delivery schedule will be negotiated with all offerors. The Government reserves the right to award under either the required delivery schedule or the proposed delivery schedule. If the offeror proposes no other delivery schedule, the required delivery schedule above will apply.

**OFFEROR'S PROPOSED DELIVERY SCHEDULE**

ITEM NUMBER	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT

**CONTRACT CLAUSES ADDENDUM**

**52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS -- COMMERCIAL ITEMS (MAY 2001)**

(a) The Contractor agrees to comply with the following FAR clauses, which are incorporated in this contract by reference, to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

- (1) 52.222-3, Convict Labor (E.O. 11755);
- (2) 52.233-3, Protest after Award (31 U.S.C 3553).

(b) The Contractor agrees to comply with the FAR clauses in this paragraph (b) which the contracting officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

*(Contracting Officer shall check as appropriate.)*

- ☐ (1) 52.203-6, Restrictions on Subcontractor Sales to the Government, with Alternate I (41 U.S.C. 253g and 10 U.S.C. 2402).
- ☐ (2) 52.219-3, Notice of HUBZone Small Business Set-Aside (Jan 1999)
- ☐ (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (Jan 1999) (if offeror elects to waive the preference, it shall so indicate in its offer).
- ☐ (4) (i) 52.219-5, Very Small Business Set-Aside (Pub. L. 103-403, section 304, Small Business Reauthorization and Amendments Act of 1994).
  - ☐ (ii) Alternate I to 52.219-5.
  - ☐ (iii) Alternate II to 52.219-5.
- ☐ (5) 52.219-8, Utilization of Small Business Concerns (15 U.S.C. 637 (d)(2) and (3)).
- ☐ (6) 52.219-9, Small Business Subcontracting Plan (15 U.S.C. 637 (d)(4)).
- ☐ (7) 52.219-14, Limitations on Subcontracting (15 U.S.C. 637(a)(14)).
- ☐ (8), (9) and (10) are not applicable to this acquisition.
- ☒ (11) 52.222-21, Prohibition of Segregated Facilities (Feb 1999)
- ☒ (12) 52.222-26, Equal Opportunity (E.O. 11246).
- ☒ (13) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C. 4212).
- ☒ (14) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C. 793).
- ☒ (15) 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C. 4212).
- ☒ (16) 52.222-19, Child Labor-Cooperation with Authorities and Remedies (E.O. 13126).
- ☒ (17)(i) 52.223-9, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (42 U.S.C. 6962(c)(3)(A)(ii)).
  - ☐ (ii) Alternate I of 52.223-9 (42 U.S.C. 6962(i)(2)(C)).
- ☐ (18) through (26) are not applicable to this acquisition.
- ☐ (27) 52.239-1, Privacy or Security Safeguards (5 U.S.C. 522a).
- ☐ (28) 52.247-64, Preference for Privately Owned U.S.-Flagged Commercial Vessels (46 U.S.C. 1241).

(c) The Contractor agrees to comply with the FAR clauses in this paragraph (c), applicable to commercial services, which the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

*(Contracting Officer check as appropriate.)*

- ☐ (1) 52.222-41, Service Contract Act of 1965, as Amended (41 U.S.C. 351, et seq.).
- ☐ (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- ☐ (3) 52.222-43, Fair Labor Standards Act and Service Contract Act -- Price Adjustment (Multiple Year and Option Contracts) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- ☐ (4) 52.222-44, Fair Labor Standards Act and Service Contract Act -- Price Adjustment (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- ☐ (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to Predecessor Contractor Collective Bargaining Agreement (CBA) (41 U.S.C. 351, et seq.).

(d) This paragraph is not applicable to this acquisition.

(e) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c) or (d) of this clause, the Contractor is not required to include any FAR clause, other than those listed below (and as may be required by an addenda to this paragraph to establish the reasonableness of prices under Part 15), in a subcontract for commercial items or commercial components --

- (1) 52.222-26, Equal Opportunity (E.O. 11246);
- (2) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C. 4212);
- (3) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C. 793); and
- (4) 52.247-64, Preference for Privately Owned U.S.-Flagged Commercial Vessels (46 U.S.C. 1241) (flow down not required for subcontracts awarded beginning May 1, 1996).
- (5) 52.222-41, Service Contract Act of 1965, As Amended (41 U.S.C. 351, et seq.).

**252.212-7001 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS APPLICABLE TO DEFENSE ACQUISITIONS OF COMMERCIAL ITEMS (DEC 2000)**

(a) The Contractor agrees to comply with any clause that is checked on the following list of DFARS clauses which, if checked, is included in this contract by reference to implement provisions of law or Executive Orders applicable to acquisitions of commercial items or components.

- |          |   |
|----------|---|
| ___      | 252.205-7000, Provision of Information to Cooperative Agreement Holders (10 U.S.C. 2416)  |
| ___      | 252.206-7000, Domestic Source Restriction (10 U.S.C. 2304)  |
| ___      | 252.219-7003, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DoD Contracts) (15 U.S.C. 637)   |
| <u>X</u> | 252.225-7001, Buy American Act and Balance of Payments Program (41 U.S.C. 10a-10d, E.O. 10582).   |
| ___      | 252.225-7007, Buy American Act--Trade Agreements--Balance of Payments Program (41 U.S.C. 10a-10d, 19 U.S.C. 2501-2518, and 19 U.S.C. 3301 note).                                    |
| <u>X</u> | 252.225-7012, Preference for Certain Domestic Commodities   |
| ___      | 252.225-7014, Preference for Domestic Specialty Metals (10 U.S.C. 2241 note).   |
| ___      | 252.225-7015, Preference for Domestic Hand or Measuring Tools (10 U.S.C. 2241 note).  |
| ___      | 252.225-7016, Restriction on Acquisition of Ball and Roller Bearings (___ Alternate I) (Section 8064 of Pub. L. 106-259).   |
| ___      | 252.225-7021, Trade Agreements (19 U.S.C. 2501-2518, and 19 U.S.C. 3301 note).  |
| ___      | 252.225-7027, Restriction on Contingent Fees for Foreign Military Sales (22 U.S.C. 2779)  |
| ___      | 252.225-7028, Exclusionary Policies and Practices of Foreign Governments (22 U.S.C. 2755)   |
| ___      | 252.225-7029, Preference for United States or Canadian Air Circuit Breakers (10 U.S.C. 2534(a)(3)).   |
| ___      | 252.225-7036, Buy American Act--North American Free Trade Agreement Implementation Act--Balance of Payments Program (___ Alternate I) (41 U.S.C. 10a -10d and 19 U.S.C. 3301 note). |
| ___      | 252.227-7015, Technical Data--Commercial Items (10 U.S.C. 2320)   |
| ___      | 252.227-7037, Validation of Restrictive Markings on Technical Data (10 U.S.C. 2321)   |
| ___      | 252.243-7002, Requests for Equitable Adjustment (10 U.S.C. 2410)  |
| ___      | 252.247-7023, Transportation of Supplies by Sea ___ Alternate I ___ Alternate II (10 U.S.C. 2631)   |
| ___      | 252.247-7024, Notification of Transportation of Supplies by Sea (10 U.S.C. 2631)  |

(b) In addition to the clauses listed in paragraph (e) of the Contract Terms and Conditions Required to Implement Statutes or Executive Orders -- Commercial Items clause of this contract, the Contractor shall include the terms of the following clauses, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

- 252.225-7014, Preference for Domestic Specialty Metals, Alternate I (10 U.S.C. 2241 note)
- 252.247-7023, Transportation of Supplies by Sea (10 U.S.C. 2631)
- 252.247-7024, Notification of Transportation of Supplies by Sea (10 U.S.C. 2631)

**ADDITIONAL CONTRACT TERMS AND CONDITIONS -- APPLICABLE WHEN CHECKED.**

\_\_\_ **PAYMENT BY ELECTRONIC FUNDS TRANSFER - CENTRAL CONTRACTOR REGISTRATION (FAR 52.232-33) (MAY 1999)**

\_\_\_ **REQUIRED CENTRAL CONTRACTOR REGISTRATION (DFARS 252.204-7004) (MAR 1998)**

**X** **PAYMENT BY THIRD PARTY (FAR 52.232-36)(MAY 1999.)**

\_\_\_ **YEAR 2000 WARRANTY – INFORMATION TECHNOLOGY**

(a) The Contractor warrants that all information technology (IT) (as defined at FAR 2.101), whether commercial or noncommercial, delivered under this contract that will be required to perform date/time processing involving dates subsequent to December 31, 1999, shall be Year 2000 compliant if properly installed, operated, and maintained in accordance with the contract specifications and applicable documentation. If the contract requires that specific deliverables operate together as a system, this warranty shall apply to those deliverables as a system.

(b) "Year 2000 compliant" (as defined at FAR 39.002) means that the IT accurately processes date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations, to the extent that other IT, used in combination with the IT being delivered, properly exchanges date/time data with it. The "proper exchange" of date/time data shall be in accordance with the interface requirements specification(s) of the contract.

(c) For line item deliverables which are commercial items (as defined at FAR 2.101), and which include commercial IT, the terms and conditions of the standard commercial warranty covering such commercial IT shall apply in addition to, and to the extent such terms and conditions are consistent with, this warranty. Any applicable commercial warranty shall be incorporated into this contract by attachment.

(d) Notwithstanding any provision to the contrary in other warranty requirement(s) of this contract, or in the absence of any such warranty requirement(s), the remedies available to the Government under this warranty shall include those provided in the Inspection clause(s) of this contract. Nothing in this warranty shall be construed to limit any rights or remedies the Government may otherwise have under this contract.

(e) Unless specified elsewhere in the contract, the Contractor will also deliver to the Government a report summarizing any Year 2000 compliance testing that was performed, and the results thereof.

(f) This warranty shall expire on 31 January 2001, or one hundred eighty (180) days after acceptance of the last deliverable IT item under this contract (including any option exercised hereunder), whichever is later.

**X** **52.211-5 MATERIAL REQUIREMENTS (AUG 2000)**

(a) *Definitions.* As used in this clause --

"New" means composed of previously unused components, whether manufactured from virgin material, recovered material in the form of raw material, or materials and by-products generated from, and reused within, an original manufacturing process; provided that the supplies meet contract requirements, including but not limited to, performance, reliability, and life expectancy.

"Reconditioned" means restored to the original normal operating condition by readjustments and material replacement.

"Recovered material" means waste materials and by-products recovered or diverted from solid waste, but the term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.

"Remanufactured" means factory rebuilt to original specifications.

"Virgin material" means--

(1) Previously unused raw material, including previously unused copper, aluminum, lead, zinc, iron, other metal or metal ore; or

(2) Any undeveloped resource that is, or with new technology will become, a source of raw materials.

(b) Unless this contract otherwise requires virgin material or supplies composed of or manufactured from virgin material, the Contractor shall provide supplies that are new, reconditioned, or remanufactured, as defined in this clause.

(c) A proposal to provide unused former Government surplus property shall include a complete description of the material, the quantity, the name of the Government agency from which acquired, and the date of acquisition.

- (d) A proposal to provide used, reconditioned, or remanufactured supplies shall include a detailed description of such supplies and shall be submitted to the Contracting Officer for approval.
- (e) Used, reconditioned, or remanufactured supplies, or unused former Government surplus property, may be used in contract performance if the Contractor has proposed the use of such supplies, and the Contracting Officer has authorized their use.

**X ADDITIONAL MATERIAL REQUIREMENT (MAR 2001)**

All items shall be new, as defined in FAR 52.211-5, Material Requirements.

**INVOICES (APR 1984)**

The Contractor's invoices must be submitted before payment can be made. The Contractor will be paid on the basis of the invoice, which must state --

- (a) The starting and ending dates of the subscription delivery; and
- (b) Either that orders have been placed in effect for the addressees required, or that the orders will be placed in effect upon receipt of payment.

**INVOICE PROCEDURES AND LIMITATION OF LIABILITY**

(a) Limitation of Liability. This order is subject to a "not-to-exceed" funding limitation and the amount currently available for payment hereunder is limited to the total "not-to-exceed" amount in Block 28 of the order. No legal liability on the part of the Government for payment in excess of this amount shall arise unless additional funds are made available and are incorporated as a modification to this order. If the contractor cannot perform in exact accordance with this order, withhold performance and notify the contracting officer immediately, giving your quotation.

(b) Invoicing. The contractor shall submit invoices to:

Name: , Code , Building

Mailing Address:

Undersea Warfare Center Division, Newport  
1176 Howell Street  
Newport, RI 02841-1708

Naval

Telephone: Commercial: (401) 832-

(c) Final Adjustment. A written modification to this order will reflect actual costs incurred at the end of the order period, and be subject to a downward adjustment only. No changes can exceed the total "not-to-exceed" amount in Block 28 of the order, or as last modified.

**ACCESS TO GOVERNMENT SITE (APR 1999)**

(a) Contractor personnel shall comply with all current badging and security procedures required to gain access to any Government site. Access to Naval Undersea Warfare Center Division, Newport sites may only be gained by obtaining a badge (either permanent or temporary) from the security office.

(b) The contractor shall ensure that each contractor employee reads the pamphlet entitled, "Safety and Occupational Health Information for Contractors and Visitors" prior to commencing performance at any NUWC DIVNPT site. Contact Code 552 at (401) 832-3534 or 5890 in Newport, RI.

(c) The contractor shall ensure that each contractor employee reads the document entitled, "NUWC Environmental Policy" prior to commencing performance at any NUWC DIVNPT site. This document is available at <http://www.npt.nuwc.navy.mil/envirnp.htm>

(d) The contractor shall ensure that each contractor employee completes ISO 14001 Awareness training within 30 days of commencing performance at any NUWC DIVNPT site. This training is available at <http://c55.npt.nuwc.navy.mil/551/>

(e) The contractor shall remove from the Government site any individual whose presence is deemed by the Commander, NUWC DIVNPT, to be contrary to the public interest or inconsistent with the best interests of national security.

## **SOLICITATION PROVISIONS ADDENDUM**

### **AWARD**

Award will be made to that responsible offeror proposing the lowest price for supplies or services meeting the requirements of the solicitation.

### **52.212-1 INSTRUCTIONS TO OFFERORS -- COMMERCIAL ITEMS (OCT 2000)**

(a) *North American Industry Classification System (NAICS) code and small business size standard.* The NAICS code and small business size standard for this acquisition appear in Block 10 of the solicitation cover sheet (SF 1449). However, the small business size standard for a concern which submits an offer in its own name, but which proposes to furnish an item which it did not itself manufacture, is 500 employees.

(b) *Submission of offers.* Submit signed and dated offers to the office specified in this solicitation at or before the exact time specified in this solicitation. Offers may be submitted on the SF 1449, letterhead stationery, or as otherwise specified in the solicitation. As a minimum, offers must show --

- (1) The solicitation number;
- (2) The time specified in the solicitation for receipt of offers;
- (3) The name, address, and telephone number of the offeror;
- (4) A technical description of the items being offered in sufficient detail to evaluate compliance with the requirements in the solicitation. This may include product literature, or other documents, if necessary;
- (5) Terms of any express warranty;
- (6) Price and any discount terms;
- (7) "Remit to" address, if different than mailing address;
- (8) A completed copy of the representations and certifications at FAR 52.212-3;
- (9) Acknowledgment of Solicitation Amendments;
- (10) Past performance information, when included as an evaluation factor, to include recent and relevant contracts for the same or similar items and other references (including contract numbers, points of contact with telephone numbers and other relevant information); and
- (11) If the offer is not submitted on the SF 1449, include a statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation. Offers that fail to furnish required representations or information, or reject the terms and conditions of the solicitation may be excluded from consideration.

(c) *Period for acceptance of offers.* The offeror agrees to hold the prices in its offer firm for 30 calendar days from the date specified for receipt of offers, unless another time period is specified in an addendum to the solicitation.

(d) *Product samples.* When required by the solicitation, product samples shall be submitted at or prior to the time specified for receipt of offers. Unless otherwise specified in this solicitation, these samples shall be submitted at no expense to the Government, and returned at the sender's request and expense, unless they are destroyed during preaward testing.

(e) *Multiple offers.* Offerors are encouraged to submit multiple offers presenting alternative terms and conditions or commercial items for satisfying the requirements of this solicitation. Each offer submitted will be evaluated separately.

(f) *Late submissions, modifications, revisions, and withdrawals of offers.*

(1) Offerors are responsible for submitting offers, and any modifications, revisions, or withdrawals, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that offers or revisions are due.

(2) (i) Any offer, modification, revision, or withdrawal of an offer received at the Government office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and-

(A) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of offers; or

(B) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(C) If this solicitation is a request for proposals, it was the only proposal received.

(ii) However, a late modification of an otherwise successful offer, that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(3) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the offer wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(4) If an emergency or unanticipated event interrupts normal Government processes so that offers cannot be received at the Government office designated for receipt of offers by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation or other notice of an extension of the closing date, the time specified for receipt of offers will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(5) Offers may be withdrawn by written notice received at any time before the exact time set for receipt of offers. Oral offers in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile offers, offers may be withdrawn via facsimile received at any time before the exact time set for receipt of offers, subject to the conditions specified in the solicitation concerning facsimile offers. An offer may be withdrawn in person by an offeror or its authorized representative if, before the exact time set for receipt of offers, the identity of the person requesting withdrawal is established and the person signs a receipt for the offer.

(g) *Contract award (not applicable to Invitation for Bids)*. The Government intends to evaluate offers and award a contract without discussions with offerors. Therefore, the offeror's initial offer should contain the offeror's best terms from a price and technical standpoint. However, the Government reserves the right to conduct discussions if later determined by the Contracting Officer to be necessary. The Government may reject any or all offers if such action is in the public interest; accept other than the lowest offer; and waive informalities and minor irregularities in offers received.

(h) *Multiple awards*. The Government may accept any item or group of items of an offer, unless the offeror qualifies the offer by specific limitations. Unless otherwise provided in the Schedule, offers may not be submitted for quantities less than those specified. The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit prices offered, unless the offeror specifies otherwise in the offer.

(i) *Availability of requirements documents cited in the solicitation*.

(1) (i) The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29, and copies of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained for a fee by submitting a request to--

GSA Federal Supply Service Specifications Section  
Suite 8100  
470 L'Enfant Plaza, SW  
Washington, DC 20407  
Telephone (202) 619-8925)  
Facsimile (202 619-8978).

(ii) If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (i)(1)(i) of this provision. Additional copies will be issued for a fee.

(2) The DoD Index of Specifications and Standards (DoDISS) and documents listed in it may be obtained from the--  
Department of Defense Single Stock Point (DoDSSP)

Building 4, Section D  
700 Robbins Avenue  
Philadelphia, PA 19111-5094

Telephone (215) 697-2667/2179; Facsimile (215) 697-1462.

(i) Automatic distribution may be obtained on a subscription basis.

(ii) Order forms, pricing information, and customer support information may be obtained--

(A) By telephone at (215) 697-2667/2179; or

(B) Through the DoDSSP Internet site at <http://www.dodssp.daps.mil>.



(3) Nongovernment (voluntary) standards must be obtained from the organization responsible for their preparation, publication or maintenance.

(j) *Data Universal Numbering System (DUNS) Number.* (Applies to offers exceeding \$25,000.) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" followed by the DUNS number that identifies the offeror's name and address. If the offeror does not have a DUNS number, it should contact Dun and Bradstreet to obtain one at no charge. An offeror within the United States may call 1-800-333-0505. The offeror may obtain more information regarding the DUNS number, including locations of local Dun and Bradstreet Information Services offices for offerors located outside the United States, from the Internet home page at <http://www.customerservice@dnb.com>. If an offeror is unable to locate a local service center, it may send an e-mail to Dun and Bradstreet at [globalinfo@mail.dnb.com](mailto:globalinfo@mail.dnb.com).

**OFFEROR REPRESENTATIONS AND CERTIFICATIONS.**

Complete the information required below and provide a copy with your offer.

**CONTRACTOR IDENTIFICATION:**

DUNS number is : \_\_\_\_\_

CAGE code is : \_\_\_\_\_

**52.212-3 OFFEROR REPRESENTATIONS AND CERTIFICATIONS -- COMMERCIAL ITEMS  
(MAY 2001) -- ALT I (OCT 2000) -- ALT III (OCT 2000)**

(a) *Definitions.* As used in this provision:

*"Emerging small business"* means a small business concern whose size is no greater than 50 percent of the numerical size standard for the NAICS code designated.

*"Forced or indentured child labor"* means all work or service-

- (1) Exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or
- (2) Performed by any person under the age of 18 pursuant to a contract the enforcement of which can be accomplished by process of penalties.

*"Service-disabled veteran-owned small business concern"*-

- (1) Means a small business concern-
  - (i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and
  - (ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.
- (2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

*"Small business concern"* means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and size standards in this solicitation.

*"Veteran-owned small business concern"* means a small business concern-

- (1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and
- (2) The management and daily business operations of which are controlled by one or more veterans.

*"Women-owned small business concern"* means a small business concern --

- (1) Which is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and
- (2) Whose management and daily business operations are controlled by one or more women.

*"Women-owned business concern"* means a concern which is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of the its stock is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) *Taxpayer identification number (TIN)* (26 U.S.C. 6109, 31 U.S.C. 7701).

- (1) All offerors must submit the information required in paragraphs (b)(3) through (b)(5) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the Internal Revenue Service (IRS).
- (2) The TIN may be used by the government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.
- (3) *Taxpayer Identification Number (TIN).*

- ☐ TIN: \_\_\_\_\_.
- ☐ TIN has been applied for.
- ☐ TIN is not required because:

☐ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the U.S. and does not have an office or place of business or a fiscal paying agent in the U.S.;

☐ Offeror is an agency or instrumentality of a foreign government;

☐ Offeror is an agency or instrumentality of the Federal Government;

(4) *Type of organization.*

☐ Sole proprietorship

☐ Partnership

☐ Corporate entity (not tax-exempt);

☐ Corporate entity (tax-exempt);

☐ Government entity (Federal, State, or local);

☐ Foreign government;

☐ International organization per 26 CFR 1.6049-4;

☐ Other \_\_\_\_\_.

(5) *Common Parent.*

☐ Offeror is not owned or controlled by a common parent.

☐ Name and TIN of common parent:

Name \_\_\_\_\_

TIN \_\_\_\_\_

(c) Offerors must complete the following representations when the resulting contract is to be performed inside the United States, its territories or possessions, Puerto Rico, the Trust Territory of the Pacific Islands, or the District of Columbia.

Check all that apply.

(1) *Small business concern.* The offeror represents as part of its offer that it ☐ is, ☐ is not a small business concern.

(2) *Veteran-owned small business concern.* [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents as part of its offer that it ☐ is, ☐ is not a veteran-owned small business concern.

(3) *Service-disabled veteran-owned small business concern.* [Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (c)(2) of this provision.] The offeror represents as part of its offer that it ☐ is, ☐ is not a service-disabled veteran-owned small business concern.

(4) *Small disadvantaged business concern.* [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents, for general statistical purposes, that it ☐ is, ☐ is not, a small disadvantaged business concern as defined in 13 CFR 124.1002.

(5) *Women-owned small business concern.* [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents that it ☐ is, ☐ is not a women-owned small business concern.

**Note: Complete paragraph (c)(6) only if this solicitation is expected to exceed the simplified acquisition threshold.**

(6) *Women-owned business concern (other than small business concern).* [Complete only if the offeror is a women-owned business concern and did not represent itself as a small business concern in paragraph (c)(1) of this provision.]. The offeror represents that it ☐ is, a women-owned business concern.

(7), (8) and (9) are not applicable to this acquisition

(10) (Complete if the offeror has represented itself as disadvantaged in paragraph (c)(2) of this provision.) *[The offeror shall check the category in which its ownership falls]:*

☐ Black American.

☐ Hispanic American.

☐ Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians).

☐ Asian-Pacific American (persons with origins from Burma, Thailand, Malaysia, Indonesia, Singapore,

Brunei, Japan, China, Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory or the Pacific Islands (Republic of Palau), Republic of the Marshall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Hong Kong, Fiji, Tonga, Kiribati, Tuvalu, or Nauru).

- ☐ Subcontinent Asian (Asian-Indian) American (persons with origins from India, Pakistan, Bangladesh, Sri Lanka, Bhutan, the Maldives Islands, or Nepal).
- ☐ Individual/concern, other than one of the preceding.

(11) *HUBZone small business concern*. [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents as part of its offer that-

- (i) It ☐ is, ☐ is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns Maintained by the Small Business Administration, and no material change in ownership and control, principal place of ownership, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and
- (ii) It ☐ is, ☐ is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (c)(11)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating on the joint venture. [The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture: \_\_\_\_\_.] Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(d) Representations required to implement provisions of Executive Order 11246 --

(1) *Previous Contracts and Compliance*. The offeror represents that --

- (i) It ☐ has, ☐ has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation; and
- (ii) It ☐ has, ☐ has not, filed all required compliance reports.

(2) *Affirmative Action Compliance*. The offeror represents that --

- (i) It ☐ has developed and has on file, ☐ has not developed and does not have on file, at each establishment, affirmative action programs required by rules and regulations of the Secretary of Labor (41 CFR Subparts 60-1 and 60-2), or
- (ii) It ☐ has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(e) Certification Regarding Payments to Influence Federal Transactions (31 U.S.C. 1352). (Applies only if the contract is expected to exceed \$100,000.) By submission of its offer, the offeror certifies to the best of its knowledge and belief that no Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with the award of any resultant contract.

(f), (g) and (h) are not applicable to this acquisition.

(i) Certification Regarding Debarment, Suspension or Ineligibility for Award (Executive Order 12549). The offeror certifies, to the best of its knowledge and belief, that—

(1) The offeror and/or any of its principals ☐ are, ☐ are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency; and

(2) ☐ Have, ☐ have not, within the three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a Federal, state or local government contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and ☐ are, ☐ are not presently indicted for, or otherwise criminally or civilly charged by a Government entity with, commission of any of these offenses.

(3) ☐ Are, ☐ are not presently indicted for, or otherwise criminally or civilly charged by a Government entity with, commission of any of these offenses; and

(4) (i) The offeror, aside from the offenses enumerated in paragraphs (1), (2), and (3) of this paragraph (h), ☐ has, ☐ has not within the past three years, relative to tax, labor and employment, environmental, antitrust, or consumer protection laws--

(A) Been convicted of a Federal or state felony (or has any Federal or state felony indictments currently pending against them); or

- (B) Had a Federal court judgment in a civil case brought by the United States rendered against them; or
- (C) Had an adverse decision by a Federal administrative law judge, board, or commission indicating a willful violation of law.

(ii) If the offeror has responded affirmatively, the offeror shall provide additional information requested by the Contracting Officer.

(j) is not applicable to this acquisition.

**252.212-7000 OFFEROR REPRESENTATIONS AND CERTIFICATIONS--COMMERCIAL ITEMS  
(NOV 1995)**

(a) Definitions. As used in this clause--

(1) "Foreign person" means any person other than a United States person as defined in Section 16(2) of the Export Administration Act of 1979 (50 U.S.C. App. Sec. 2415).

(2) "United States person" is defined in Section 16(2) of the Export Administration Act of 1979 and means any United States resident or national (other than an individual resident outside the United States and employed by other than a United States person), any domestic concern (including any permanent domestic establishment of any foreign concern), and any foreign subsidiary or affiliate (including any permanent foreign establishment) of any domestic concern which is controlled in fact by such domestic concern, as determined under regulations of the President.

(b) Certification. By submitting this offer, the Offeror, if a foreign person, company or entity, certifies that it--

(1) Does not comply with the Secondary Arab Boycott of Israel; and

(2) Is not taking or knowingly agreeing to take any action, with respect to the Secondary Boycott of Israel by Arab countries, which 50 U.S.C. App. Sec. 2407(a) prohibits a United States person from taking.

(c) Representation of Extent of Transportation by Sea. (This representation does not apply to solicitations for the direct purchase of ocean transportation services).

(1) The Offeror shall indicate by checking the appropriate blank in paragraph (c)(2) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term "supplies" is defined in the Transportation of Supplies by Sea clause of this solicitation.

(2) Representation. The Offeror represents that it--

\_\_\_\_\_ Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

\_\_\_\_\_ Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(3) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense Federal Acquisition Regulation Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

**252.225-7000 BUY AMERICAN--BALANCE OF PAYMENTS PROGRAM CERTIFICATE (SEP 1999)**

(a) Definitions.

"Domestic end product," "qualifying country," "qualifying country end product," and "nonqualifying country end product" have the meanings given in the Buy American Act and Balance of Payments Program clause of this solicitation.

(b) Evaluation. Offers will be evaluated by giving preference to domestic end products and qualifying country end products over nonqualifying country end products.

(c) Certifications.

(1) The Offeror certifies that--

(i) Each end product, except those listed in paragraphs (c)(2) or (3) of this provision, is a domestic end product; and

(ii) Components of unknown origin are considered to have been mined, produced, or manufactured outside the United States or a qualifying country.

(2) The Offeror certifies that the following end products are qualifying country end products:

<u>Qualifying Country End Products</u>	
<u>Line Item No.</u>	<u>Country of Origin</u>
<hr/>	
(List only qualifying country end products.)	

(3) The Offeror certifies that the following end products are nonqualifying country end products:

<u>Nonqualifying Country End Products</u>	
<u>Line Item No.</u>	<u>Country of Origin</u>
<hr/>	

# Specifications and Requirements

## Lab-scale Polymer Film Extruder

### Summary:

This is a requisition for equipment to fabricate film from one or more polymers in powder, granule, or pellet form.

Equipment will include 1) a drive motor, 2) a console with temperature controllers and current and pressure indicators, 3) an extruder that accepts a polymer powder or pellet feed, melts it, and delivers it directly to a film die or optionally through a metering pump to a film die, 4) feed hoppers(2) to deliver a low density powder to the throat of the extruder, 5) a feed hopper to deliver granules and pellets, 6) an assembly to hold filter screens in the molten polymer path, 7) a metering pump to accept molten polymer from the extruder and deliver a uniform flow of molten polymer to a film die, 8) a film die to shape the molten polymer in a continuous ribbon of film, 9) a combined sensor of melt pressure and temperature.

The function of the extruder is to convert one or more polymer feed materials, to a well mixed, uniform molten mass and feed it to a film die. It is anticipated that this is best done with a counter-rotating, conical twin screw extruder design.

The feed to the extruder will be in the forms of 1) low bulk density, fine polymer powders, or 2) polymer resin granules or pellets. The low density powder form is difficult to feed by gravity. In our experience a vertical screw fed hopper is needed for these low density powders and a horizontal screw fed hopper is needed for the pellet and granule forms.

The polymers will primarily be fluoro-polymers (e.g. polyvinyl fluoride and co- or ter- polymers) that will be processed at temperatures in the range: 130-250°C. More generally polymers melting in the range 50–300°C will be processed. The extruder should have temperature-controlled zones wherein the temperature of the polymer can be raised in steps from ambient to the desired melt temperature. Three zones are usually adequate.

The length of film extruded will be determined by the amount of polymer fed. Batches of 0.5 to 10 lbs of polymer will be processed to film in an 8 hour period. At these polymer throughput rates, the polymer components must be thoroughly melted and exit the die uniformly. Typical extrusion rates will be controlled in the range: 20 - 100 g/min (or 11 - 56 cc/min at typical fluoropolymer densities of 1.8 g/cc).

The function of the metering gear pump is to accept molten polymer from the extruder and deliver it to a film die at a pulse-free, precise rate so that film exiting the die will be uniform in thickness along its length. Commonly available pumps operate at adjustable speeds up to 50 rpm and can be geared for various capacities (0.3, 0.6, 1.2, 1.8, and 3 cc/rev). A pump operating at 50 rpm with the capacity per revolution (1.2 cc/rev.) will have a maximum capacity of 60 cc/min which is sized correctly to process the maximum extruder output of 56 cc/min. The temperature of the metering pump must be controllable in the range 50-300°C.

The function of the film die is to shape the continuous flow of molten polymer exiting the metering pump (or from the extruder, directly) into a film or ribbon shape. The die should be adjustable to produce film thicknesses from 1 to 40 mils and with a width of 4 inches.

The temperature of the die must be controllable in the range 50-300°C.

The heated, wetted parts of the equipment should resist corrosion by this class of polymers, when operated at rates of one 8 hr day per month.

It is anticipated that the functions of the processing equipment specified here will be expanded in the future to include other drive units, extruders, screws, and dies. Therefore the equipment shall be part of a comprehensive system of interchangeable components for that will enable batch mixing, continuous film or strand extrusion, wire coating, etc.

A second requisition concerns take-off equipment for solidifying the film and rolling it on cardboard cylinders for storage.

Specifications and requirements are as follows:

1. Extruder drive motor:
  - a. 5 hp, drive motor,

- b. variable speed to 100 rpm with reverse,
  - c. an indicator of rpm (0-100 rpm),
  - d. mounted on a mobile cart,
  - e. 208 VAC, 60 Hz, single phase
- 2. Control console, housing & wired for:
  - a. 5 PID loop microprocessor-based temperature controllers
  - b. digital, dual pressure/temperature indicator/conditioner for use with type J thermocouples up to 500°C, microprocessor-based LED display, dual low/high pressure alarms with analog output for pressure & temperature, with recorder leads wires.
  - c. 4 zone air cooling system consisting of: air manifold, filter, pressure regulator and solenoids
  - d. 208 VAC, 60 Hz, single phase
- 3. Twin screw extruder
  - a. for coupling to and driven by (I)
  - b. twin, chrome-plated, counter-rotating, non-venting, compression, conical screws,
  - c. #416 ss-nitrided
  - d. port for dual temperature/pressure sensor, item (VII)
  - e. port for safety rupture plug with plug and rupture safety plug (rated for 9400 psig @ 150°C)
  - f. three electrically-heated, air cooled zones with thermocouple assemblies,
  - g. water cooled feed throat
  - h. protective shear coupling
  - i. air cooling kit and hoses
- 4. Vertical metering, screw feed hopper
  - a. With wiper and stirrer blades
  - b. ss construction
  - c. Drive motor and variable speed controller
- 5. Horizontal metering, screw feed hopper
  - a. with conveying screws (2) for pellet or powder feeding
  - b. ss construction
  - c. drive motor and variable speed controller
- 6. Breaker plate assembly with spacers
  - a. for holding screens to filter particles from the molten polymer
  - b. for mating between the extruder outlet and the gear pump inlet
- 7. Metering gear pump
  - a. For mating between extruder (III) and film die (V).
  - b. ½ hp dc gear drive motor
  - c. variable speed controller, 0-100 rpm
  - d. geared for a 1.2 cc/rev delivery rates
  - e. mounted on a mobile, adjustable height, floor stand
  - f. 110 VAC, 60 Hz
- 8. 4" Horizontal, adjustable gap, die assembly:
  - a. to be mated with either extruder (III) or gear pump (IV),
  - b. adjustable gap for extrusion of film with thicknesses from 1-40 mil.,
  - c. 4" film width
  - d. P20 steel construction, all wetted surfaces hard chrome plated
  - e. adapter of 303 ss
  - f. assembly heated by ½" cartridge heaters(2000 watt total)
  - g. die adapter for breaker plate
  - h. ring nut & "Y" adapter
  - i. Thermocouple and heating element for controlling die assembly temperature in the range 25-300°C; temperature displayed and controlled by signal conditioner and controller in item II,
  - j. 208 VAC, 60 Hz, single phase
- 9. Dual thermocouple and pressure transducer
  - a. Combined in one unit requiring only one port in the extruder barrel (III) with connectors for simultaneous pressure and melt temperature, indicating and recording; totally closed, flush diaphragm
  - b. 0-10,000 psig pressure range
- 10. Extruder cleaning kit with brass spatula, hand brush, brass brush for barrel, brush handle



## Specifications and Requirements

### Lab-scale Film Take-off System

Summary: This is a requisition for equipment to receive molten polymer film from an extruder (see co-pending requisition), cool it at various rates to ambient temperature to solidify it, and wind it on rolls for storage.

The equipment will have the following components:

- I. A film extrusion take-off assembly for continuously accepting molten film from an extruder film die, cooling it to ambient temperature at various rates to solidify it, and winding it onto cardboard rolls for storage. Cooling is accomplished by a pinching contact with two rotating chill rolls. One of these rolls is driven by variable speed drive. Both chill rolls are cooled by passage of a temperature- controlled fluid through their cores.

In certain cases the molten film must be cooled quickly to prevent growth of crystallinity in the film. In this case the chill rolls of the take-off system must be positioned close (within ~ 1") to the extruder film die lip to catch, rapidly cool, and solidify the molten extrudate. Rapid cooling may require that the chill roll be operated at sub-ambient temperatures (~ 0°C).

In other cases the molten film must be cooled and solidified slowly to facilitate the growth of crystallinity. In this case the chill rolls can be positioned at a greater distance from the extruder film die and may be heated to a temperature approaching the molten film temperature (~180 – 230°C°).

Molten film will exit the extruder at rates from 20 to 100 g/min. The molten film will be 4 inches wide at the film die but, as the result of on-line stretching, may be narrower (1 to 3") at entrance to the chill rolls.

The film product will be used in electrical applications where thickness uniformity is required. Film thicknesses in the range of 1 to 10 mils are desired. It is desired to produce film whose thickness is uniform to within 10% of the average of the central 80% (some thickening at the edges may be encountered).

Key components are expected to be:

- a. Two chill rolls: One drive roll and one pinch roll. Both 3-4" diameter x 8" wide, chrome plated and cored for passage of a controlled temperature fluid with adjustable gap between rolls.
- b. The chill roll to be driven at speeds in the range 0.25–13 rpm by a low rpm/high torque motor.
- c. One polish roll: 2.5 x 11", chrome plated, adjustable gap positioning.
- d. One idler roll: 5/8" x 11", stainless steel
- e. One cardboard take-up roll with adjustable friction clutch driven by a DC gear motor with stepless variable speed SCR control, 115v, 60Hz
- f. A mobile floor stand for the take-off system with four floor leveling stabilizers and a horizontal roll adjust to allow close and precise positioning of the quench roll with respect to the extruder film die.
- g. A controlled temperature fluid circulator and insulated hoses to connect the circulator to the chill rolls. Controlled temperature range: -12° to + 130° +/- 0.1 °C. Digital proportional temperature control, LED indicator, rapid bath cool down, bath drain, high/low liquid safety, 1.3 gal fluid capacity, 115V, 11 amp.